ZUBOV, N.M., inzh.

Means for reducing the seasonal aspect of earthwork in pipeline construction. Stroi. pred. neft. prom. 3 no.6:18-21 Je '58.
(MIRA 11:7)

(Pipelines)

ACC NR: AP6016105 SOURCE CODE: UR/0095/65/000/011/0008/0010

AUTHOR: Golovkin, N. A.; Zubov, N. M.; Ikonnikov, R. M.; Talgin, L. G. 25 B

ORG: none

TITLE: Possibilities of using anger anchors for laying pipe in Western Siberia

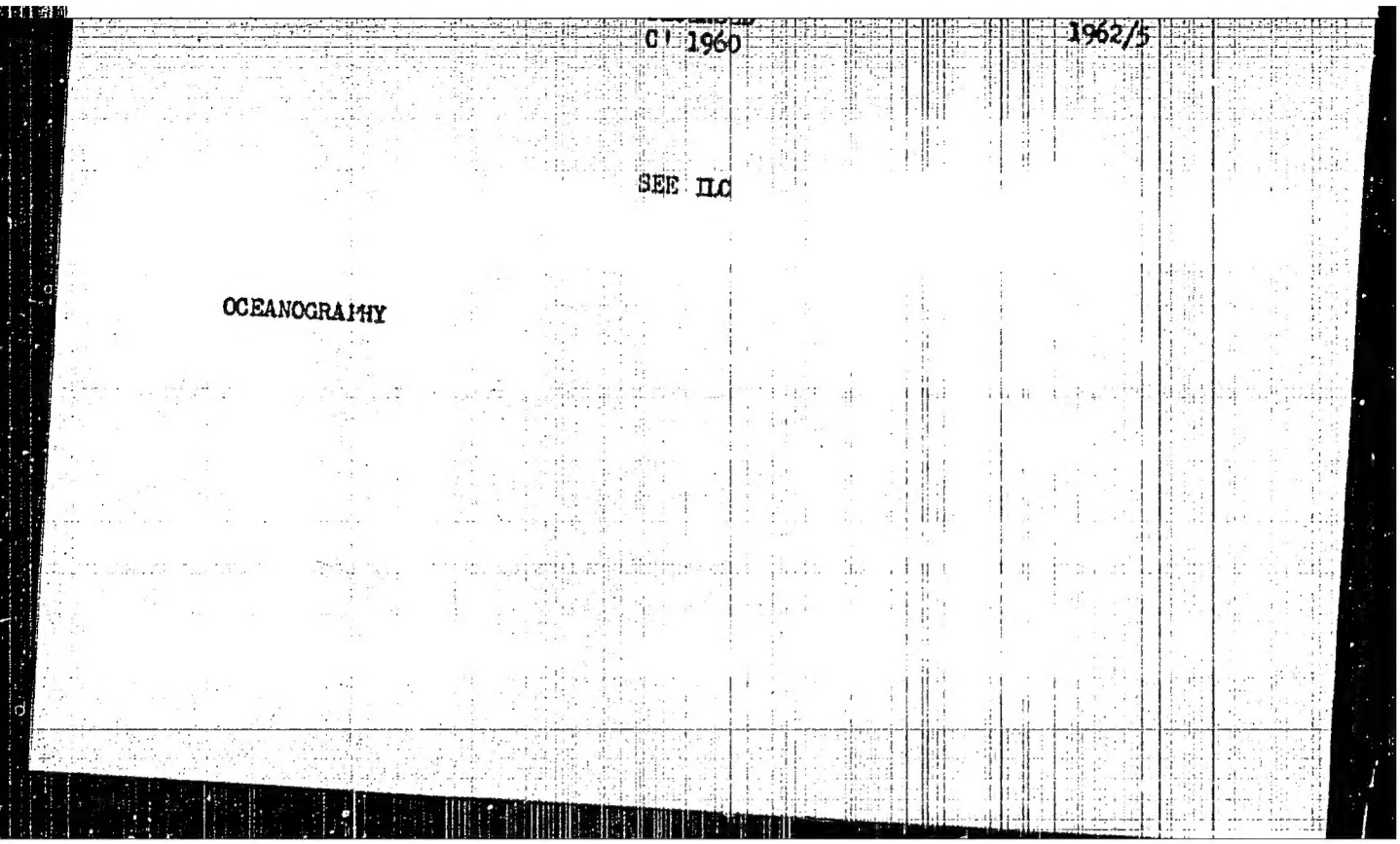
SOURCE: Stroitel'stvo truboprovodov, no. 11, 1965, 8-10

TOPIC TAGS: pipeline, reinforced concrete

ABSTRACT: The authors discuss geologic and climatic problems involved in laying gas pipe in Western Siberia. One of the important problems in laying pipe of large diameter is to get rid of the inherent positive bouyancy. In the Soviet Union this is commonly done by using annular or saddle-type reinforced concrete ballast weights of up to three tons. It is calculated that the ballast required for 1 km of 1020-mm gas pipeline is about 870 tons of reinforced concrete. The cost in material and labor comes to more than 20,000 rubles. Recent innovations in ballast methods include water-loading, concreting and the use of reinforced concrete shells. The first two methods require temperatures above the freezing point of water, and the third is still in the experimental stage. The authors propose the use of anger-type anchors such as are widely used in the United States for giving negative bouyancy to gas pipelines. This device is described and the conditions under which its use is applicable are described. Research and development work is now being done in the Soviet Union to solve the various problems involved in the use of screw anchors for laying gas pipe. Orig. art. has: 1 figure. [JPRS] 2

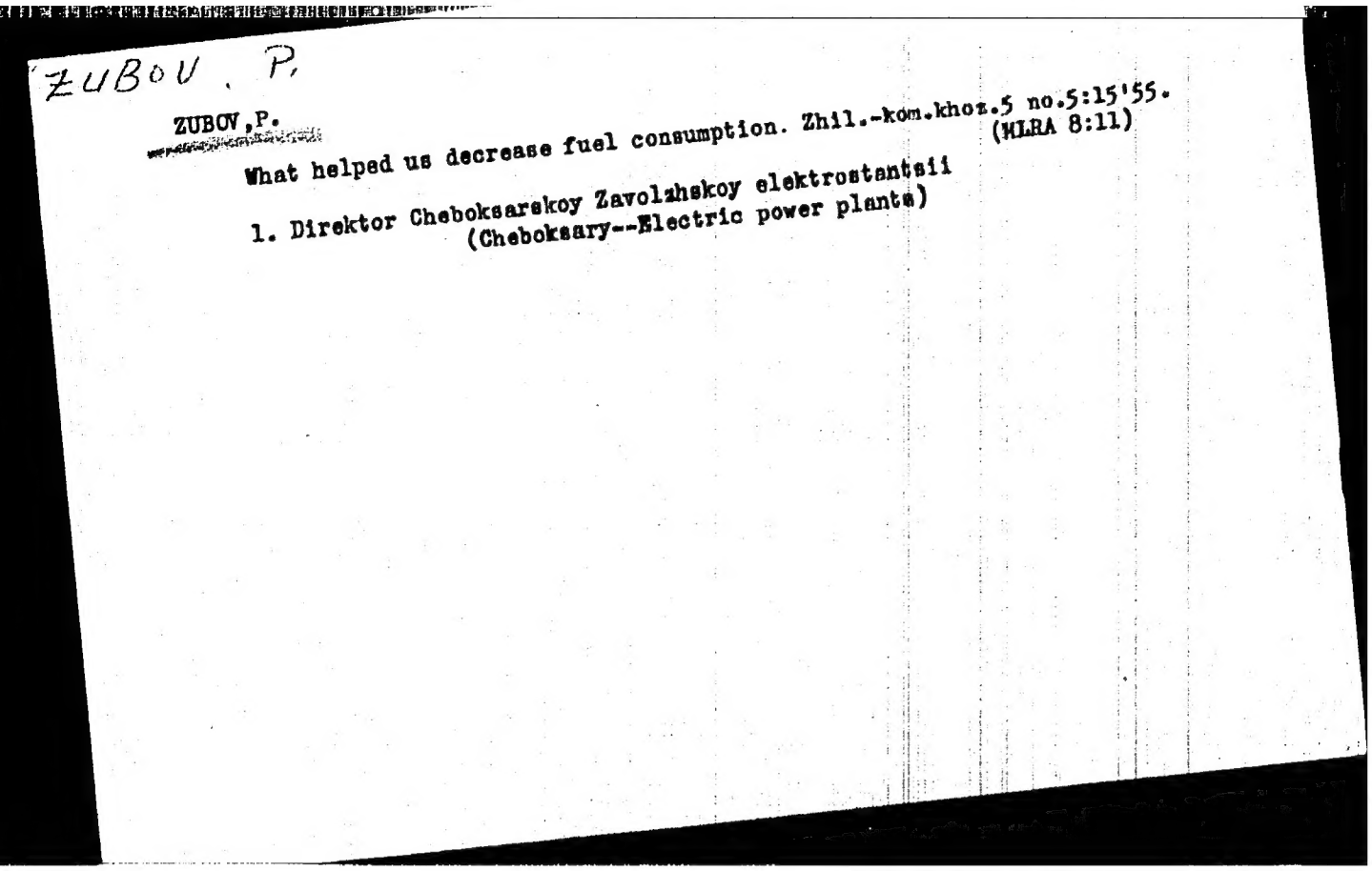
SUB CODE: 13, 11 / SUBM DATE: none UDC: 621.643.002.2

Card 1/1



ZUBOV, N.N., inzh.

Buildings and structures of cement and precast reinforced concrete plants. Opyt stroi. no.31:60-71 '61. (MIRA 14:2)
(Cement plants) (Precast concrete)



ZUBOV, P.

ZUBOV, P.

What helped us decrease fuel consumption. Zhil.-kom.khoz.5 no.5:15'55. (MLRA 8:11)

1. Direktor Cheboksarskoy Zavolzhskoy elektrostantsii (Cheboksary--Electric power plants)

ZUBOV, P.B.

SHEBANOVA, Anna Ivanovna; ZUBOV, P.B., red.; ASTAKHOVA, I.V., tekhn. red.

[Labor rights of workers in commerce] Trudovye prava rabotnikov torgovli. Moskva, Gos. izd-vo iurid. lit-ry, 1957. 101 p. (MIRA 11:7)
(Clerks (Retail trade))
(Labor laws and legislation)

P.A.

771.513

447

Structure of Gels: Preparation of Globular Gelatin. P. I. Zubov, Z. N. Zhurkina and V. A. Kargin. *Proc. Acad. Sci. U.S.S.R.*, 1949, 67, 659-661.—A globular form of gelatin has been prepared by cooling dilute gelatin solutions and removing the solvent under vacuum. This gelatin is reported to dissolve slowly in water at 10° to 15° C., and to gel when this solution is then heated to 20° to 22° C.

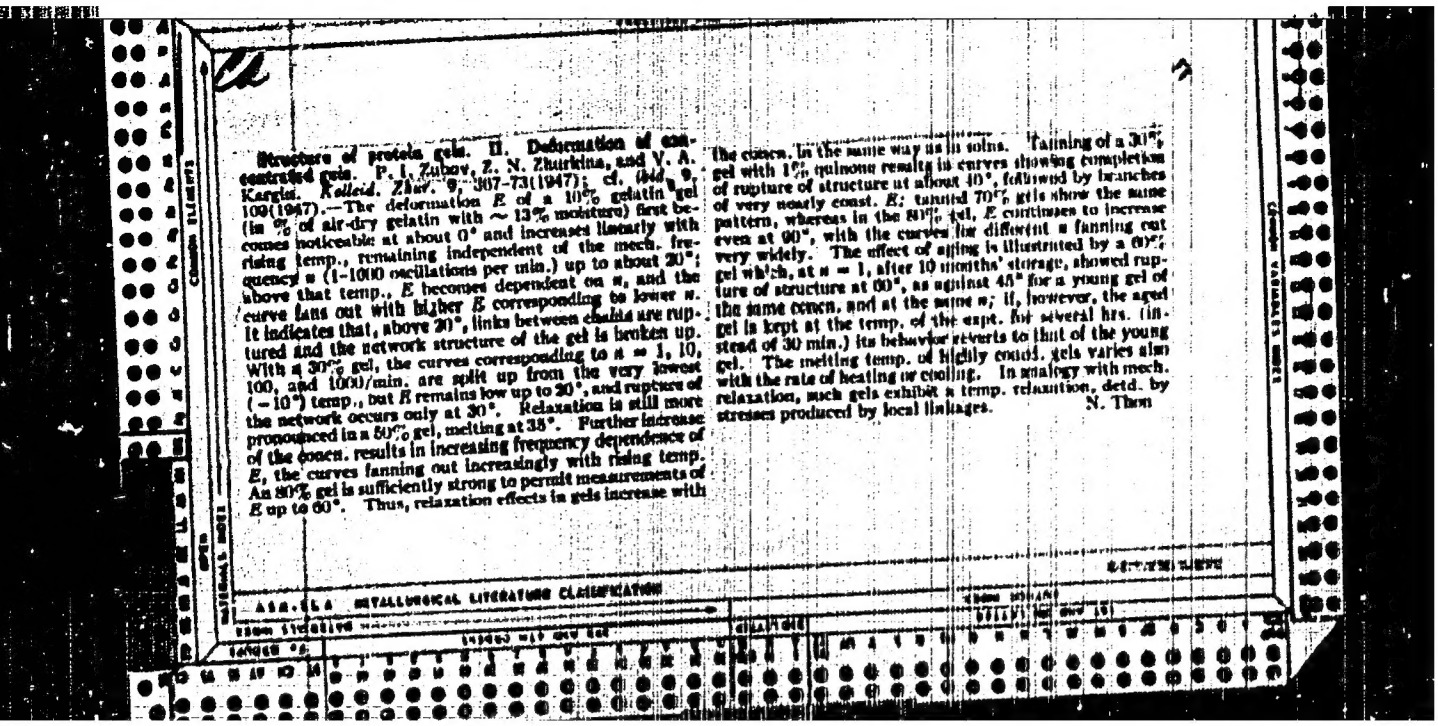
Mon. Abs. Bull. Kodak Res. Labs.

1951

ZUBOV, P. I.

"Mechanism of the Formation of Protein Gels." Thesis for degree of Dr. Chemical Sci. Sub. 1 Jul 49, Sci Res Order of the Labor Red Banner Physicochemical Inst imeni L. Ya. Karpov.

Summary 82, 18 Dec 52, Dissertations Presented For Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec 1949.



Structure of protein gels. II. Deformation of concentrated gels. P. I. Zubov, Z. N. Zhurkina, and V. A. Kargin. *Kolloid. Zhur.* 9, 307-73(1947); cf. *ibid.* 9, 109(1947).—The deformation E of a 10% gelatin gel (in % of air-dry gelatin with ~ 13% moisture) first becomes noticeable at about 0° and increases linearly with rising temp., remaining independent of the mech. frequency n (1–1000 oscillations per min.) up to about 20°; above that temp., E becomes dependent on n, and the curve fans out with higher E corresponding to lower n. It indicates that, above 20°, links between chains are ruptured and the network structure of the gel is broken up. With a 30% gel, the curves corresponding to n = 1, 10, 100, and 1000/min. are split up from the very lowest (−10°) temp., but E remains low up to 20°, and rupture of the network occurs only at 30°. Relaxation is still more pronounced in a 50% gel, melting at 35°. Further increase of the concn. results in increasing frequency dependence of E, the curves fanning out increasingly with rising temp. An 80% gel is sufficiently strong to permit measurements of E up to 60°. Thus, relaxation effects in gels increase with the concn. in the same way as in sols. Tanning of a 30% gel with 1% quinone results in curves showing completion of rupture of structure at about 40°, followed by branches of very nearly const. E; tanned 70% gels show the same pattern, whereas in the 80% gel, E continues to increase even at 90°, with the curves for different n fanning out very widely. The effect of aging is illustrated by a 60% gel which, at n = 1, after 10 months' storage, showed rupture of structure at 60°, as against 45° for a young gel of the same concn. and at the same n; if, however, the aged gel is kept at the temp. of the expt. for several hrs. (instead of 30 min.) its behavior reverts to that of the young gel. The melting temp. of highly concd. gels varies also with the rate of heating or cooling. In analogy with mech. relaxation, such gels exhibit a temp. relaxation, detd. by stresses produced by local linkages. N. Thon

L 00750-66 EWT(m)/EPF(c)/EWP(j)/T/ETG(m) RPL WW/RM

ACCESSION NR: AP5020967 UR/0190/65/007/008/1344/1347

AUTHOR: Zubov, P. I.; Smirnova, A. M.; Raykova, T. V.

TITLE: Preparation of organodispersions of chlorinated polyvinyl chloride

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 8, 1965, 1344-1347

TOPIC TAGS: polyvinyl chloride, chlorinated organic compound, chemical dispersion, block copolymer, polymerization, acrylonitrile, plastic film

ABSTRACT: Improvement in the properties of film forming chlorinated PVC was attempted by radical polymerization of acrylonitrile in its solutions. Organodispersions were formed by polymerizing 3-15% acrylonitrile in 10-20% solutions of chlorinated PVC (containing 61% Cl), and the physico-chemical properties of the modified PVC were determined. With a given acrylonitrile concentration the ratio of Cl-PVC: PAN (polyacrylonitrile) in the product was constant, regardless of initial Cl-PVC concentration. It was thus concluded that graft copolymers were formed. The viscosity of the organodispersion was reduced as the PAN

Card 1/2

L 00750-66

ACCESSION NR: AP5020967

content increased, while the strength of the film formed therefrom was somewhat higher than strength of Cl-PVC film. The elasticity was essentially the same up to ~ 24% PAN and with more PAN the film became brittle. The viscous flow and glass temperatures of the materials increased with increase in PAN content. The values of the thermomechanical properties of the graft copolymers were also higher than those of mechanical mixtures of homopolymers of Cl-PVC and PAN Orig. art. has: 2 tables and 6 figures.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AN SSSR) 44,55

SUBMITTED: 04Sep64 ENCL: 00 SUB CODE: MT, GC

NR REF SOV: 004 OTHER: 000

Card 2/2

YELISEYEVA, V.I.; ZUBOV, P.I.; MALOFEYEVSKAYA, V.F.

Growth of particles in the synthesis of acrylate latexes. Vysokom. soed. 7 no.8:1348-1353 Ag '65. (MIRA 18:9)

1. Institut fizicheskoy khimii AN SSSR.

ZUBOV, P.I.; SUKHAREVA, L.A.; FADIN, V.A.; KISELEV, M.R.

Internal stresses arising during film formation from phenol-formaldehyde resin. Koll. zhur. 25 no.4:434-437 Jl-Ag '63. (MIRA 17:2)

1. Institut fizicheskoy khimii AN SSSR, Moskva.

ZUBOV, P.I.; SUKHAREVA, L.A.; SHEVERDYAYEVA, G.A.; OSIPOV, Ye.A.

Internal stresses arising during film formation from polyvinyl alcohol and its derivatives. Koll. zhur. 25 no.4:438-440 Jl-Ag '63. (MIRA 17:2)

1. Institut fizicheskoy khimii AN SSSR, Moskva.

ZUBOV, P.I., doktor khim. nauk

Organic coatings. Vest. AN SSSR 33 no.12:32-36 D '63.
(MIRA 17:1)

1. Institut fizicheskoy khimii AN SSSR.

L 18414-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6003419 (A) SOURCE CODE: UR/0190/66/008/001/0098/0103

AUTHORS: Yeliseyeva, V. I.; Avetisyan, L. S.; Drozel'a, S. S.; Zubov, P. I. 31 B

ORG: Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Role of branching of polymeric chains in the formation of latex films 15 15

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 1, 1966, 98-103

TOPIC TAGS: copolymer, polymerization kinetics, acrylic plastic

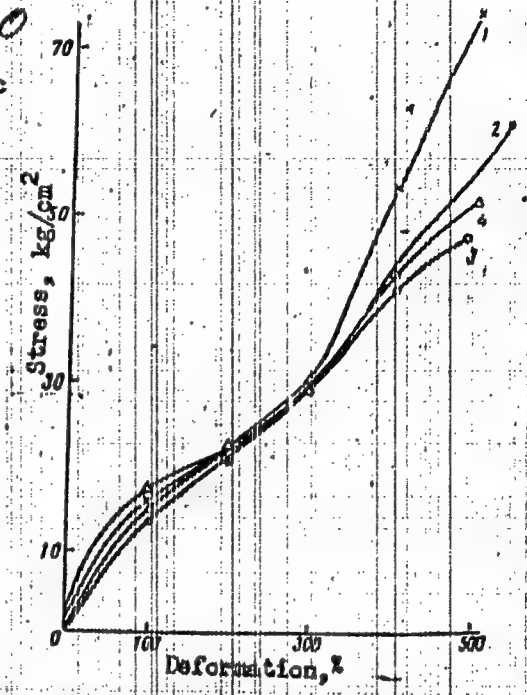
ABSTRACT: The effect of the length and branching of the alkyl substituent upon the coalescence process of latex particles has been studied in the copolymer alkyl acrylate-vinyl acetate. The copolymer was synthesized by emulsion polymerization with the use of a homologous series of alkyl acrylates: C_1, C_2, C_4, and C_8. Kinetics of the process was investigated, and the physical and chemical properties of the product, as well as its behavior on drying as a thin film, were studied. Mechanical properties of various films are summarized in Fig. 1. It was established that lattices from copolymers of lower alkyl acrylates possess

Card 1/3 UDC: 678.01:53

L 18414-66

ACC NR: AP6003419

Fig. 1. Mechanical properties of copolymeric films: 1 - copolymer of vinyl acetate with methyl acrylate; 2 - with ethyl acrylate; 3 - with butyl acrylate; 4 - with 2-ethylhexylacrylate.



Card 2/3

L 18414-66
ACC NR: AP6003419

the best film-forming properties. This is ascribed to the ease of the intermolecular and intermolecular contact in the case of short side chains. The same reasoning applies to the explanation of high water resistance of methyl- and ethylacrylic copolymers as compared with that of butyl- and 2-ethylhexylacrylic copolymers. Orig. art. has: 2 tables and 6 figures.

SUB CODE: 07/ SUBM DATE: 17Feb65/ ORIG REF: 003/ OTH REF: 005

Card 3/3 pa

L 18469-66 EWT(m)/EWP(j)/T RM
ACC NR: AP6004318 SOURCE CODE: UR/0303/65/000/005/0049/0051

AUTHOR: Grozinskaya, Z. P.; Zubov, P. I.

ORG: none

TITLE: Thermal aging of epoxy coatings in organic media

SOURCE: Lakokrasochnyye materialy i ikh primeneniye, no. 5, 1965, 49-51

TOPIC TAGS: epoxy plastic, resin, protective coating, thermal aging, lacquer

ABSTRACT: Experimental data on changes in the physicomechanical properties of cured epoxy coatings and films in the process of thermal aging carried out under cyclic conditions at 20-100°C in a 50% aqueous ethyl alcohol medium are presented. Changes in the internal stresses, elastic modulus, and swelling of films and coatings of ED-5 epoxy resin and E-4100 epoxy lacquer during thermal aging were determined. Films of E-4100 lacquer showed greater elastomeric deformations than did those of ED-5 resin, indicating a substantial difference in structural networks and relaxation processes on swelling. The difference in relaxation processes also accounts for differences observed in the peeling of the polymer films off metal sub-

Card 1/2 UDC: 667.613.533.684

L 18469-66

ACC NR: AP6004318

strates. In coatings based on ED-5 resin, degradation takes place after 15-20 days of thermal aging under the indicated conditions. Changes in the physicomechanical properties of epoxy coatings based on E-4100 lacquer and ED-5 resin during thermal aging in a 50% aqueous solution of ethyl alcohol indicate that swelling and drying are different in character: in the first case, the processes are reversible and the physicomechanical properties are retained while in the second case the processes are irreversible. Orig. art. has: 8 figures.

SUB CODE: 07,11/ SUBM DATE: 00/ ORIG REF: 005/ OTH REF: 000

Card 2/2

KRYLOVA, I.A.; GOSTEV, M.M.; KOVRIZHKO, L.F.; ZUBOV, P.I.; POSPELOVA, K.A.; PAVINKOV, N.V.; SOTNIKOV, I.F.

Effect of surface-active agents on the strength characteristics of the vulcanizates of carbon black extended SKA-30APK rubber. Kauch. i rez. 24 no.12:13-14 '65. (MIRA 18:12)

1. Institut fizicheskoy khimii AN SSSR i Voronezhskiy zavod sinteticheskogo kauchuka im. S.M. Kirova.

S/0020/64/155/002/0389/0391

ACCESSION NR: AP4022721

AUTHOR: Dy*l'kov, M. S.; Sanzharovskiy, A. T.; Zubov, P.I.

TITLE: The effect of temperature on long-term adhesive strength of polyethylene.

Source: AN SSSR, Doklady*, v. 155, no. 2, 1964, 389-391

TOPIC TAGS: polyethylene, stabilized polyethylene, unstabilized polyethylene, adhesive strength, absolute temperature, gas constant, semilogarithmic coordinate, activation energy, linear relationship, plastic

ABSTRACT: The temperature-time dependence of adhesive strength was tested in a specially designed device with an air-controlled chamber which made it possible to test ten samples simultaneously under different temperatures and loads. The test samples were low-pressure stabilized and unstabilized polyethylene; the temperature-time relationship was found to be identical for both types of polyethylene. In the case of unstabilized polyethylene, the activation energy used in the destruction of the adhesive bond amounts to 36 kilocalories per mole, and in the stabilized polyethylene about 24 kilocalories per mole. This is probably due to the fact that the additions of stabilizer tend to inhibit the oxidizing process on

Card 1/2

ACCESSION NR: AP4022721

the adhesive interfaces of the metal. Our figures indicate that linear relationship applies only to stabilized polyethylene, and no such relationship is found in unstabilized adhesive. The calculation of the activation energy of the cohesive as well as the adhesive destruction requires that the time (kinetic) relationship of these two methods of destruction be taken into account. Orig. art. has: 3 figures, 3 formulas and 2 tables.

ASSOCIATION: Institut fizicheskoy khimii akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences SSSR)

SUBMITTED: 28Oct63 DATE ACQ: 08Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 006 OTHER: 001

Card 2/2

ACCESSION NR: AP4018157 S/0191/64/000/003/0005/0009

AUTHORS: Zubov, P.I.; Grozinskaya, Z.P.; Sanzharovskiy, A.T.

TITLE: Thermal aging of polyethylene films.

SOURCE: Plasticheskiye massy*, no.3, 1964, 5-9

TOPIC TAGS: polyethylene, polyethylene film, polyethylene coating, internal stress, modulus of elasticity, tensile strength, elongation, thermal effect, thermal aging

ABSTRACT: The changes in internal stress, modulus of elasticity, tensile strength and elongation of polyethylene films and coatings with aging at temperatures from -60 to +100C were investigated. Rolling the films during forming improves their mechanical properties. The presence of a stabilizer (0.13% neozon A, 0.07% diphenyl-p-phenylenediamine, and 1.5% gas black) in polyethylene raises its resistance to thermal aging, while the mechanical properties of unstabilized polyethylene are lowered in 20 days; the stabilized material does not change in 40 days. Thermal aging of polyethylene is analagous to that

Card 1/2

ACCESSION NR: AP4018157

of nitrocellulose and polyester coatings. Cooling the film strengthens the intermolecular interaction, increases the modulus of elasticity and strength, and also increases internal stresses which retard relaxation processes, and causing cracking and peeling. Heating will enhance relaxation of the internal stresses and close up the defects of the coating. Orig. art. has 11 figures.

ASSOCIATION: None

SUBMITTED: 00	DATE ACQ: 27Mar64	ENCL: 00	
SUB CODE: MA, PH	NR REF SOV: 001	OTHER: 000	

Card 2/2

ZUBOV, P.I.; OSIPOV, Ye.A.

Effect of the addition of water on globular polyvinyl alcohol solutions. Vysokom.soed. 7 no.1:94-97 Ja '65. (MIRA 18:5)

1. Institut fizicheskoy khimii AN SSSR.

ANDRIANOV, K.A., akademik; YEMEL'YANOV, V.N.; SUKHAREVA, L.A.; SMIRNOVA, Yu.P.; ZUBOV, P.I.

Synthesis and physicomechanical properties of films of polymers of regular structure. Dokl. AN SSSR 161 no.1:99-102 Mr 65. (MIRA 18:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ACC NR: AP6005830 (A) SOURCE CODE: UR/0374/65/000/006/0108/0113
JD/WW/RM/EM/RM

AUTHOR: Yevmenov, S. S. (Moscow); Sanzharovskiy, A. T. (Moscow); Zubov, P. I. (Moscow)

ORG: none

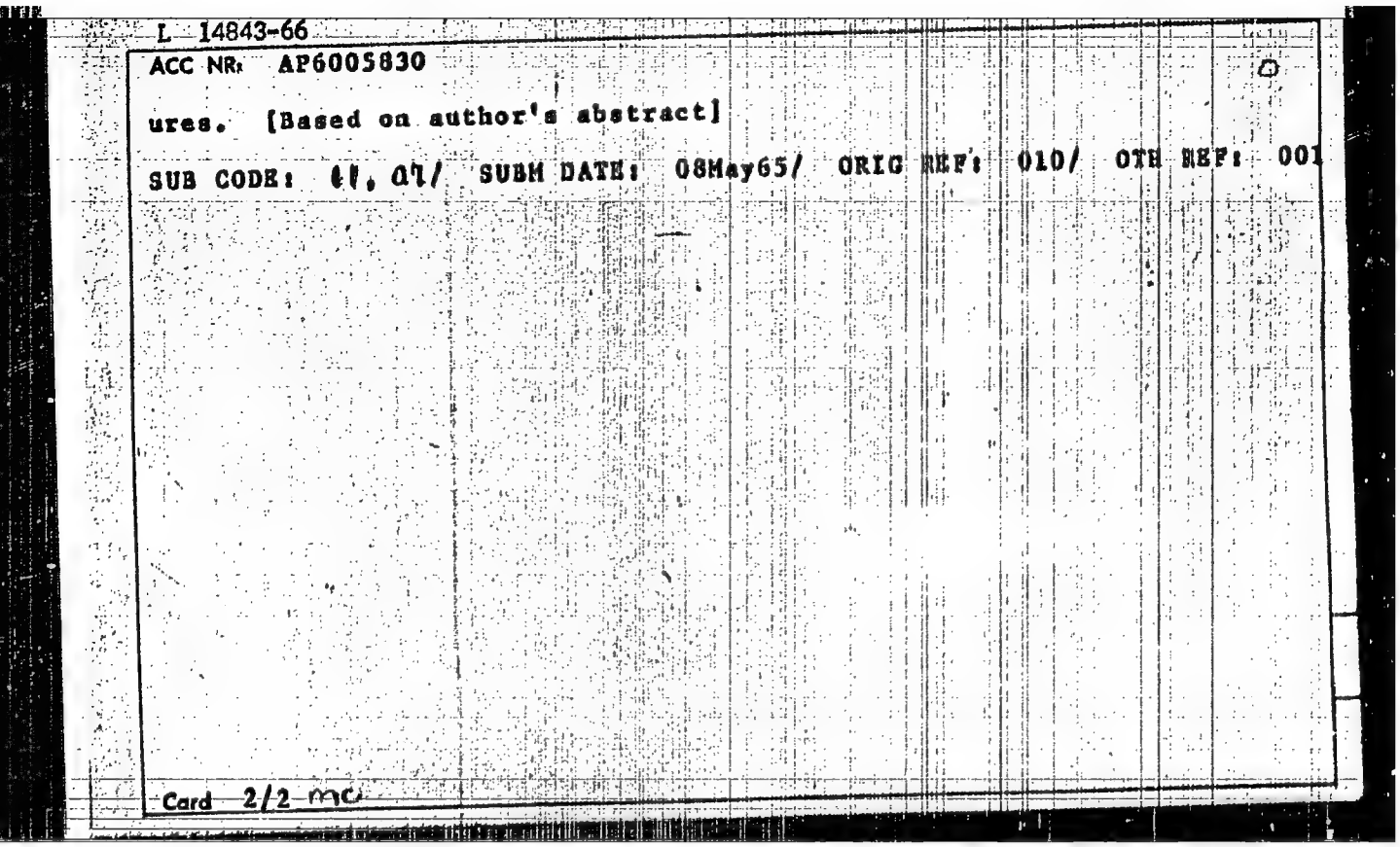
TITLE: Adhesion of ED-5 epoxy resin to metals

SOURCE: Mekhanika polimerov, no. 6, 1965, 108-113

TOPIC TAGS: high polymer, polyterpene resin, epoxy plastic, thermal stability, [illegible], tensile strength, adhesive bonding, temperature dependence, metal bonding, resin

ABSTRACT: A study revealed that the tensile strength and thermal resistance of adhesive joints of metal to ED-5 epoxy resin to metal passes through a maximum with an increase in concentration of the hardening agent (tetraethylenepentamine). The cohesion type failure turns into an adhesional one at a certain concentration of the hardener. The author assumes that changes in the nature of the polymer to metal bond are the cause of the relationship observed. The appearance of fractures or maxima at temperatures from 80 to 120C on the temperature dependence curves of the strength of adhesive joints is explained by changes in the physical state of the polymer. Orig. art. has: 10 fig.

Card 1/2 UDC: 678:621.792.053-678.6+539.61



L 14843-66
ACC NR: AP6005830
ures. [Based on author's abstract]
SUB CODE: 11, 07/ SUBM DATE: 08May65/ ORIG REF: 010/ OTH REF: 001
Card 2/2 mc

GOLIKOVA, V.S.; SHVETS, V.I.; MITROFANOVA, T.K.; DOROFEYEVA, L.T.; ZUBOV, P.I.; PREOBRAZHENSKIY, N.A.

Spectral studies of vegetable oils and animal fats. Report No. 2: Infrared spectra of α,β-diglycerides. Zhur.org.khim. 1 no.3:439-445 Mr '65. (MIRA 18:4)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova i Institut fizicheskoy khimii AN SSSR.

GOLIKOVA, V.S.; MITROFANOVA, T.K.; SHVETS, V.I.; ZUBOV, P.I.; PREOBRAZHENSKIY, N.A.

Spectral studies of vegetable oils and animal fats. Report No. 1: Infrared spectra of triglycerides. Zhur.org.khim. 1 no.3:433-439 Mr '65. (MIRA 18:4)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.Lomonosova i Institut fizicheskoy khimii AN SSSR.

YELISEYEVA, V.I.; ZHARKOVA, N.G.; CHUBAROVA, A.V.; ZUBOV, P.I.

Emulsion polymerization of lower alkyl acrylates. Vysokom.soed. 7 no.1:156-162 Ja '65. (MIRA 18:5)

1. Institut fizicheskoy khimii AN SSSR.

DYL'KOV, M. S.; ANZHAROVSKIY, A. T.; ZUBOV, P. I.

Effect of temperature on th long-time adhesion strength of polyeth lene. Dokl. AN SSSR 155 no. 2:389-391 Mr '64.
(MIRA 17:5)

1. Institut fizicheskoy khimii AN SSSR. Predstavleno akademikom V. A. Karginym.

SERAYA, N.I.; ZUBOV, P.I.; IVANOVA, L.V.

Thixotropy in organic suspensions of bentonite and aerosil.
Koll. zhur. 27 no.2:259-263 Mr-Ap '65. (MIRA 18:6)

1. Institut fizicheskoy khimii AN SSSR, Moskva.

ACCESSION NR: AP4011308 S/0069/64/026/001/0057/0060

AUTHORS: Kry*lova, I. A.; Pospelova, K. A.; Zubov, P. I.

TITLE: Stabilizing aqueous dispersions of carbon black with surface active agents

SOURCE: Kolloidny*y zhurnal, v. 26, no. 1, 1964, 57-60

TOPIC TAGS: carbon black, channel black, stabilized aqueous suspension, Leukanol stabilized carbon black, rubber filler, dispersion stabilization, specific surface, NAF carbon black, Ukhtin channel black

ABSTRACT: Aqueous suspensions of NAF carbon black and Ukhtin channel black stabilized by Leukanol and by the potassium soap of hydrogenated rosin were compared. The specific surface area of the stabilized aqueous carbon black is less than that of the channel black, indicating greater aggregation of the carbon black particles and more strongly coagulated structures. The lesser stability of the NAF carbon blacks apparently improves contact of these particles with latex globules, causing more effective reinforcing of rubbers in

Card 1/2

ACCESSION NR: AP4011308

latex.
"The authors thank N. N. Lezhnev under whose direction the carbon black analysis was conducted."
Orig. art. has: 4 Figures and 2 Tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR Moskva (Institute of Physical Chemistry AN SSSR)

SUBMITTED: 28May63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: MA NR REF SOV: 004 OTHER: 001

Card 2/2

YAKUBOVICH, D.S.; SANZHAROVSKIY, A.T.; ZUBOV, P.I.

Studying the effect of the copper base structure on the adhesion to it of polyurethane coatings. Lakokras. mat. i ikh prim. no.5:30-33 '63. (MIRA 16:11)

ZVEREV, M.P.; RUCHINSKIY, S.P.; ZUBOV, P.I.

Thermal effect produced by the solution of polymers as dependent on the nature of the solvent. Dokl.AN SSSR 149 no.1:128-130 Mr '63. (MIRA 16:2)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova i Institut fizicheskoy khimii AN SSSR. Predstavleno akademikom V.A.Karginym.

(Polymers) (Heat of solution) (Plasticizers)

Gel structure V. [illegible] Zubov, E. N. [illegible]

[illegible]

[illegible] The casein [illegible] thus obtained was sol. in cold water. Films from H_2O-glycerol [illegible] of II had a smaller tensile strength and a much smaller [illegible] elongation than films from I. The viscosity of aq. soln. of II (up to 6%) was comparable to that of H_2O. I and II sorbed H_2O vapor equally well. The [illegible] point of II (from titration) showed that some basic groups [illegible] [illegible]

USSR.

Gel structure. VII. Globulization of rubbers by formation of dilute solutions. P. I. Zubov, Z. N. Zhurkina, and V. A. Kargin (L. Ya. Karpov Phys. Research Inst. Phys. Chem., Moscow). Kolloid. Zhur. 17, 51-5(1955).—cf. 49, 7283e.—The viscosity, η, of sols (e.g., 0.16%) of natural rubber (I) in $CHCl_3$ or CH_2Cl_2 was lowered, e.g., tenfold, when 30 wt. % I_2 was added, while further additn. of I_2 had no effect on η. In the absence of air, the depression of η by I_2 was smaller. I_2 had little or no effect on the η of butadiene rubber, with or without air. It was believed that the decrease of η was caused by globulization of I. electron micrographs were taken, they showed aggregates of about 1 μ in I and dense particles of about 0.05 μ in I + I_2.

J. J. Bikerman

L 36153-66 EWT(m)/EWP(j)/T IJP(c) RM

ACC NR: AP6016309 (A) SOURCE CODE: UR/0314/66/000/001/0031/0034

AUTHOR: Avgustov, Yu. A. (Engineer); Senzharovskiy, A. T. (Candidate of technical sciences); Zubov, P. I. (Doctor of chemical sciences) 37 12

ORG: none

TITLE: The effect of pigments on the physical and mechanical properties of polyethylene coatings produced by the spraying method

SOURCE: Khimicheskoye i neftyanoye mashinostroyeniye, no. 1, 1966, 31-34

TOPIC TAGS: plastic coating, polyethylene plastic, pigment, ~~surface property~~ internal stress, solid physical property, mechanical property

ABSTRACT: Internal stresses in polyethylene coatings are probably the result of a difference in the coefficients of thermal expension of the coating and the support. The present article reports the results of an investigation of the effect of inorganic pigments on the physical and mechanical properties of polyethylene coatings, with the aim of seeking a method of increasing the resistance of these coatings to cracking. The investigations were made with high density Brand E polyethylene (MRTU 6 No. 854-61), unstabilized PNDG, stabilized PNDGS, PNDD

UDC: 678.742:620.17.001.5

Card 1/2

L 32761-66 EWT(m)/EWP(v)/T/EWP(j) WW/GG/RM

ACC NR: AP6012707 (A) SOURCE CODE: UR/0190/66/008/004/0604/0612

AUTHOR: Spitsyn, V. I. ; Zubov, P. I.; Kabanov, V. Ya.; Grozinskaya, Z. P.

ORG: Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: The effect of radiation on the adhesion of polyethylene to aluminum

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 4, 1966, 604-612

TOPIC TAGS: aluminum, metal coating, radiation effect, adhesion, high temperature effect, polyethylene plastic

ABSTRACT: It was found that irradiation of a polyethylene coating on aluminum foil doubles its adhesion. If the coating is heated to the melting point after irradiation, adhesion triples. The nature of adhesion curves depends greatly on the type of polyethylene and the air medium. The irradiation of coatings and base layers is more effective than irradiation of the polyethylene powder alone. The increase in adhesion is explained by the radiation-induced oxidation of polyethylene in the contact area, which favors orientation of the carbonyl groups with respect to the aluminum oxide film. In addition, flexibility of the chains is increased in the radiation field, facilitating adhesive-substrate contacts. The decrease of adhesion with further irradiation is related to increased radiative crosslinking in polyethylene. The experimental results were confirmed by IR and NMP spectra, and by measuring the modulus of elasticity of irradiated polyethylene. The authors

UDC: 678.01:53+678.782

Card 1/2

L 36813-66 EWP(j)/EWT(m)/T/EWP(v)/EWP(t)/ETI IJP(c) GG/RM/JH/WW/JD

ACC NR: AP6024415 SOURCE CODE: UR/0020/66/169/001/0146/0149

AUTHOR: Kabanov, V. Ya.; Grozinskaya, Z. P.; Zubov, P. I.; Spitsyn, V. I. (Academician)

ORG: Institute of Physical Chemistry, Academy of Sciences, SSSR (Institut fizicheskoy khimii Akademii nauk SSSR)

TITLE: The effect of radiation on adhesion of polymer coatings on aluminum

SOURCE: AN SSSR. Doklady, v. 169, no. 1, 1966, 146-149

TOPIC TAGS: protective coating, polymer coating, plastic coating, adhesion, radiation effect, ionizing radiation, electron radiation, aluminum

ABSTRACT: Previous studies by the authors of the effect of ionizing radiation on the adhesion of polyethylene coatings on aluminum foil [Vysokomolek. soyed., v. 8, no. 4, 1966 and DAN, v. 165, no. 3, 1965] were extended to other polymeric coatings of different chemical composition. A comparative study was made of adhesion of 500—600 μ thick epoxy, polyester, perchlorovinyl, and polyurethane coatings before and after irradiation at a low (from a Co^{60} source) or high ($\sim 10^4$ rad/sec from a linear accelerator) dose rate of ionizing radiation. A stripping method previously described was used to evaluate adhesion. Energy of adhesion was also determined during irradiation with a high-intensity electron beam (from the linear accelerator).

UDC: 678.744

Card 1/2

L 36313-66

ACC NR: AP6024415

An increase in adhesion of all coatings studied was noted after prolonged irradiation at a low dose rate (163 rad/sec), in air or vacuum, together with an increase in rigidity and brittleness of all but the polyurethane coatings. Epoxy coatings exhibited the most notable increase in adhesion. The initial increase in adhesion was explained as the result of radiation-induced formation of polar groups, e.g., OH, C=O, and after hardening of the coatings. In opposition to polyethylene, the energy of adhesion of other coatings was higher under the electron beam than before irradiation. The highest difference in adhesion was noted for epoxy coatings, the lowest for polyurethane coatings. This increase in adhesion was reversible in case of a short-time irradiation, irreversible in case of a longer exposure (higher radiation dose absorbed) to the electron beam. The role of chemical changes in polymers and relaxation processes was discussed to explain the increase in adhesion in polymers exposed to the electron beam. Duration of the exposure to radiation and the presence of oxygen in the coatings' composition were the most important factors contributing to increasing adhesion. Orig. art. has: 1 figure and 3 tables.

[JK]

SUB CODE: 11/ SUBM DATE: 09Dec65/ ORIG REF: 004/ ATD PRESS: 5138

ns

Card 2/2

ZUBOV P. I.

SHREYNER, S.A.; ZUBOV, P.I.

The structure of gels. Part 11: The dependence of the binding strength on the conditions of formation of gelatin films [with summary in English]. Koll.zhur. 19 no.5:651-653 S-O '57. (MIRA 10:10)

1.Fiziko-khimicheskiy institut im. L.Ya. Karpova i Leningradskiy tekhnologicheskiy institut pishchevoy promyshlennosti.
(Gelatin)

69-58-2-12/23

AUTHORS: Proshlyakova, N.F., Zubov, P.I., Kargin, V.A.

TITLE: The Structure of Gels. 12. The Preparation of Gels From Co-Polymer Solutions of Methyl Methacrylate and Methacrylic Acid (Stroyeniye studney. 12. Polucheniye studney iz rastvorov sopolimera metilmetakrilata i metakrilovoy kisloty)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 2, pp 199-201 (USSR)

ABSTRACT: The dependence of the gel formation on the quantity of intermolecular bonds has not been sufficiently investigated. In this article, a synthetic polymer of known composition and structure, viz. the copolymer of methyl methacrylate and methacrylic acid, was used in order to study the influence of certain groups and bonds on the gel formation. In the studied copolymer, a certain number of carboxyl groups is present which makes the formation of net structures by means of bivalent metal oxide solutions possible. The results of thermotechnical investigations of diluted (concentration 4.5 g/100 ml) solutions and gels in mixture with cyclohexanon and methyl alcohol (ratio 4 : 1), in the presence of various quantities of SrO, are given. In the solution without addition of SrO an increase of temperature leads to a

Card 1/2

The Structure of Gels. 12. The Preparation of Gels From Co-Polymer Solutions of Methyl Methacrylate and Methacrylic Acid

sharp increase of the deformation. An addition of 2 and 3 % of SrO deflects the deformation curve to higher temperatures, and an addition of 4 % changes the form of the curve. In the studied solution, 4 bonds are formed per every 1,000 links in the presence of 2 % SrO. This is more than the number theoretically calculated. This is due to the formation of bonds other than the chemical salt type of bonds.
There is 1 graph, 1 table, and 7 references, 4 of which are Soviet, 2 English, and 1 American.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva (Physical-Chemical Institute imeni L.Ya. Karpov, Moscow)

SUBMITTED: June 25, 1957

1. Gels--Structure 2. Gels--Preparation 3. Methyl methacrylate --Applications 4. Methacrylic acid--Applications

69-58-2-13/23

AUTHORS: Proshlyakova, N.F., Zubov, P.I., Kargin, V.A.

TITLE: The Structure of Gels. 13. Investigation of the Properties of Gels of the Co-Polymer Methyl Methacrylate and Methacrylic Acid Containing Monovalent Metals (Stroyeniye studney. 13. Issledovaniye svoystv studney sopolimera metilmetakrilata i metakrilovoy kisloty, soderzhashchikh odnovalentnyye metally)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 2, pp 202-208 (USSR)

ABSTRACT: In the study of the properties of copolymer solutions, the effect of additions which do not cause chemical bonds between the molecules has been investigated. These additions (NaOH, KOH, TlOH, and ammonia) lead to gel formation at room temperature. The copolymer solution used in the mixture was methyl methacrylate and methacrylic acid in the concentration 4.5 g/ 100 ml with cyclohexanon and ethyl alcohol in the ratio 4 : 1. The deformation developing in 10 sec at a stress of 0.5 g/cm^2 was measured. The introduction of NaOH deflects the curve to higher temperatures. The comparison of figure 1 and 2 shows that the character of the deformation curve is not changed with the increase

Card 1/3

The Structure of Gels. 13. Investigation of the Properties of Gels of the Co-Polymer Methyl Methacrylate and Methacrylic Acid Containing Monovalent Metals

of the polymer solution concentration. Figure 3 shows that the deformation is dependent on the stress within the limits 0.25 to 25 g/cm^2. Experimental facts demonstrate that the mentioned solutions have properties which are characteristic for elastic systems. The formation of chemical bonds between the molecules is excluded. The cause leading to the formation of a structural network of the gel is the non-chemical interaction of polar salt groups. The deformation of the concentrated gel, containing 15 % caustic soda depending on the temperature at various deformation speeds, is shown in figure 6. The properties of gels of various concentration prepared in the presence of NaOH, and of diluted copolymer solutions, are similar to the properties of gelatine gels and solutions.
There are 9 graphs and 5 Soviet references.

69-58-2-13/23

The Structure of Gels. 13. Investigation of the Properties of Gels of the Co-Polymer Methyl Methacrylate and Methacrylic Acid Containing Monovalent Metals

ASSOCIATION: Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva (Physical-Chemical Institute imeni L.Ya. Karpov, Moscow)

SUBMITTED: June 25, 1957

1. Gels--Structure 2. Gels--Properties 3. Methyl methacrylate --Applications 4. Methacrylic acid--Applications

Card 3/3

69-20-3-12/24

AUTHORS: Zverev, M.P.; Yeroshkina, Ye.A.; Zubov, P.I.

TITLE: The Structure of Gels (Stroyeniye studney). 14. The Effect of the Nature of Plasticizer on the Physical-Mechanical Properties of Filled Divinylstyrene Rubber (14. Vliyaniye prirody plastifikatora na fiziko-mekhanicheskiye svoystva napolnennogo divinilstirol'nogo kauchuka)

PERIODICAL: Kolloidnyy zhurnal, 1958, vol XX, Nr 3, pp 329-331 (USSR)

ABSTRACT: It is known that divinylstyrene rubber, vulcanized without filler and in the presence of non-polar plasticizers, has better mechanical properties than rubbers plasticized by polar substances. In the article, these properties are investigated in filled rubbers. Figure 1 shows the properties of vulcanizates SKS-30A at a deformation speed of 50 and 500 mm/min. It is evident that the rubbers with polar plasticizers have better mechanical properties than those with non-polar substances. This result is explained by the blocking of the polar groups of the filler by the polar plasticizers, facilitating the adsorption of macromolecules on the surface of its particles.

Card 1/2

69-20-3-12/24

The Structure of Gels. 14. The Effect of the Nature of Plasticizer on the Physical-Mechanical Properties of Filled Divinylstyrene Rubber

There are 4 graphs and 1 Soviet reference.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L.Ya. Karpova (Physical-Chemical Institute imeni L.Ya. Karpov)
Dnepropetrovskiy khimiko-tekhnologicheskiy institut (Dnepropetrovsk Chemical-Technological Institute)

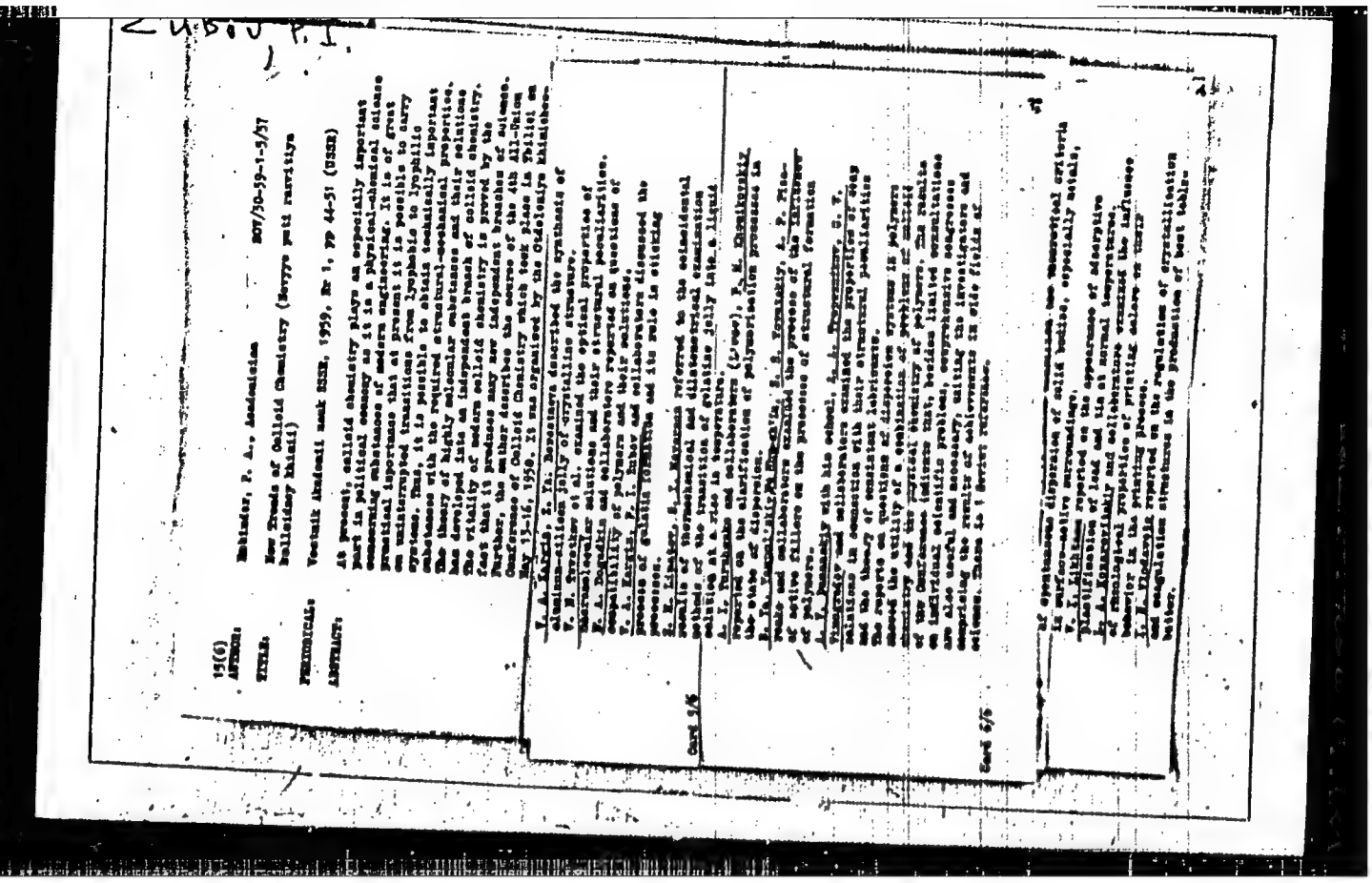
SUBMITTED: November 21, 1957

Card 2/2

1. Rubber—Properties—Analysis

"The mechanism of the formation of polymer films in gluing processes,"

Report presented at the Fourth All-Union Conference on Colloidal Chemistry, Tbilisi, Georgian SSR, 12-16 May 1958 (Koll zhur, 20,5, p.677-9, '58, Tanbman, A.B)



DOROKHINA, T.V.; NOVIKOV, A.S.; ZUBOV, P.I.

Effect of the shape of molecular chains on the properties of solutions and vulcanized films made of butyl rubber. Vysokom. soed. 1 no.1:36-45 Ja '59. (MIRA 12:9)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti i Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya. Karpova.

(Rubber, Synthetic)

LIPATOV, Yu.S.; ZUBOV, P.I.

Effect of temperature on the viscosity of concentrated solutions of polymethacrylic acid and its salts. Vysokom.soed. 1 no.1: 88-93 Ja '59. (MIRA 12:9)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Methacrylic acid)

LIPATOV, Yu.S.; ZUBOV, P.I.; ANDRYUSHCHENKO, Ye.A.

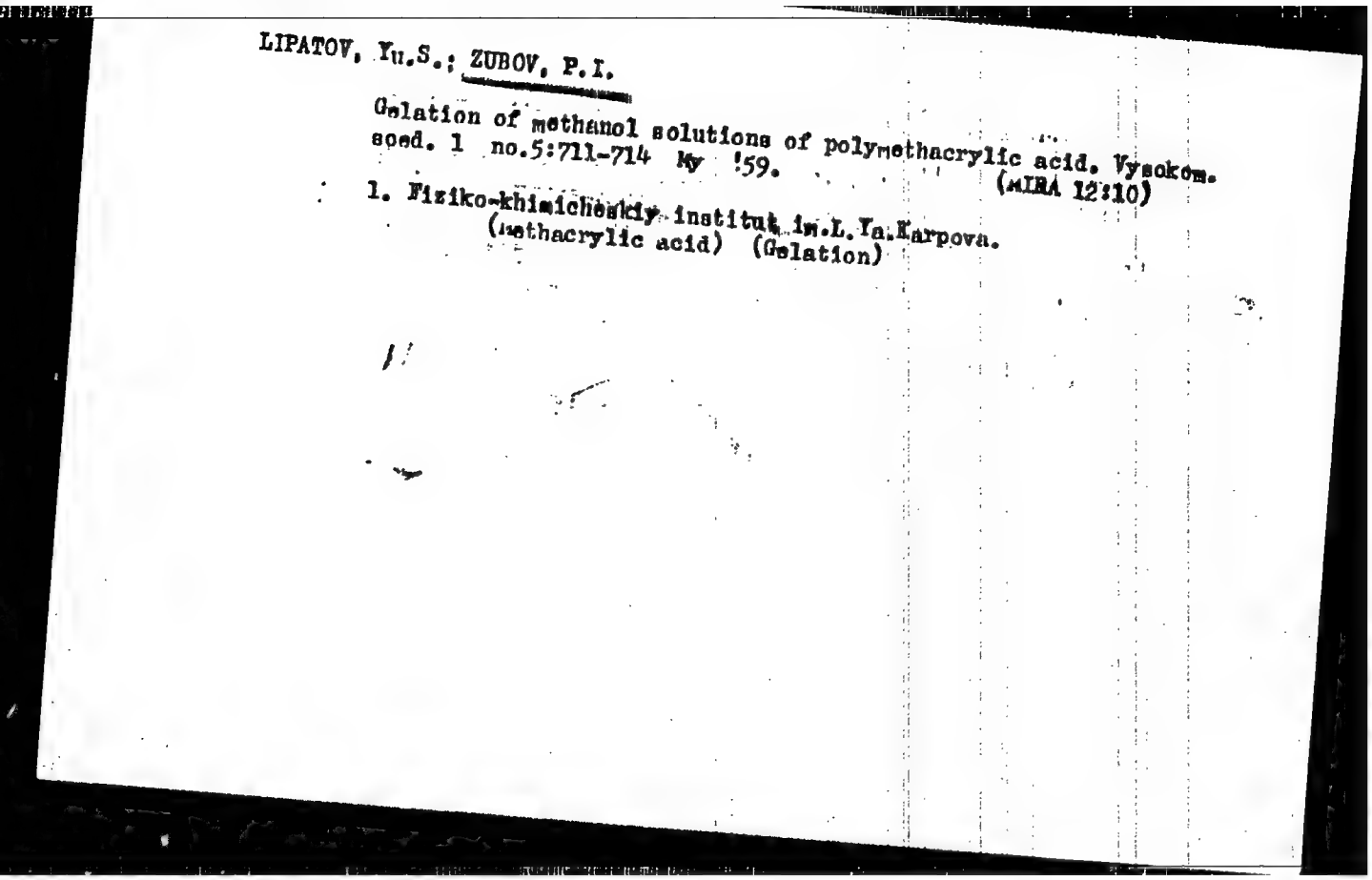
Study of the effect of temperature on the turbidity of concentrated polymethacrylic acid solutions. Vysokom. soed. 1 no.3:425-431 Mr '59. (MIRA 12:10)

1.Fiziko-khimicheskiy institut im. L. Ya. Karpova.
(Methacrylic acid) (Turbidity)

LIPATOV, Yu.S.; ZUBOV, P.I.

Structure formation in concentrated solutions of polymethacrylic acid. Vysokom. soed. 1 no.3:432-437 Mr '59. (MIRA 12:10)

1.Fiziko-khimicheskiy institut im. L. Ya. Karpova.
(Methacrylic acid)



LIPATOV, Yu.S.; ZUBOV, P.I.

Gelation of methanol solutions of polymethacrylic acid. Vysokom. soed. 1 no.5:711-714 My '59. (MIRA 12:10)

1. Fiziko-khimicheskiy institut im.L.Ya.Karpova.
(Methacrylic acid) (Gelation)

GAVRISHCHUK, V.Ya.; ZUBOV, P.I.

Mechanism of the reversion phenomenon in vulcanizates.
Vysokom. soed. 1 no.6:913-917 Je '59. (MIRA 12:10)

1.Leningradskiy tekhnologicheskiy institut im. Lensoveta i Fiziko-khimicheskiy institut im. L.Ya. Karpova.
(Vulcanization)

LIPATOV, Yu.S.; ZUBOV, P.I.

Viscosity of concentrated solutions of styrene - methacrylic acid copolymers. Vysokom.soed. 1 no.11:1655-1658 N '59. (MIRA 13:5)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Styrene) (Methacrylic acid) (Polymers)

5(4)

AUTHORS: Shreyner, S. A., Zubov, P. I. SOV/20-124-5-40/62

TITLE: The Determination of Internal Stresses in the Gluing Together of Solid Surfaces (Opredeleniye vnutrennikh napryazheniy pri skleivanii tverdykh poverkhnostey)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 5, pp 1102-1104 (USSR)

ABSTRACT: When investigating the holding power of gelatin solutions the authors found a dependence between the holding power and the conditions under which the gluing intermediate layers were produced. It was assumed that this dependence is determined by various internal (contracting) stresses which reduce the degree of adhesive power. In this connection, a quantitative estimation of internal stresses is of special interest. In transparent isotopic films on solid surfaces the degree of stress can be optically determined. However, in nontransparent films determination of double refraction is very difficult. These difficulties may be overcome by providing a base made of transparent isotropic material with elastic properties. In this case it is possible, from the variation of double refraction in the base, (i.e. beyond the boundaries of the zone

Card 1/3

in which the adhesive layer of the adhesive film is produced) to draw conclusions as to the internal stresses in the films. This assumption served as a basis for raising the problem and for carrying out the present investigation. The films to be investigated were deposited by vaporization on the surface of tetrahedral rectangular glass prisms. According to preliminary experiments phase difference actually occurs during the formation of the gelatin film on the surface of the glass prism, which, however, is distributed irregularly over the individual prisms. The smallest phase difference occurs, as may be expected, in the layers adjoining the boundary between glass and film. With increasing distance between the glass layer and the separating surface, the difference decreases according to a linear law, and, at a distance of $h \approx 3$, it attains the value zero. With a further increase of h, the curve becomes more complicated. By extrapolation of the phase difference up to $h = 0$, the integral amount of double refraction and, consequently, also the internal stress in the base (as a function of internal stress in the film) can be determined. There are 4 figures and 2 Soviet references.

The Determination of Internal Stresses in the Gluing Together of Solid Surfaces SOV/20-124-5-40/62

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Scientific Research Institute imeni L. Ya. Karpov). Leningradskiy tekhnologicheskiy institut pishchevoy promyshlennosti (Leningrad Technological Institute of the Food Industry)

PRESENTED: August 16, 1958, by V. A. Kargin, Academician

SUBMITTED: August 6, 1958

Card 3/3

ZUBOV, P.I.; PROSHLYAKOVA, N.F.

Rheological properties of the solutions of a copolymer of butyl methacrylate and methacrylic acid. Lakokras.mat.i ikh prim. no.3: 8-13 '60. (MIRA 14:4)

(Methacrylic acid) (Rheology)

ZUBOV, P.I.; PROSHLYAKOVA, N.F.

Investigating the effect of pigments on the structuration processes taking place in concentrated solutions of alkyd resins. Lakokras.mat. i ikh prim. no.4:13-17 '60. (MIRA 13:10)
(Resins, Synthetic) (Pigments)

S/069/60/022/004/002/005
B014/B054

AUTHORS: Shreyner, S. A., Zubov, P. I.

TITLE: Influence of Internal Stresses on the Adhesion Properties of Gelatin Films

PERIODICAL: Kolloidnyy zhurnal, 1960, Vol. 22, No. 4, pp. 497-502

TEXT: The present article is the 20th communication of the series "Structure of Gels". The authors determined the influence of low-molecular admixtures on the amount and distribution of internal stresses in gelatin layers which a) as an adhesive layer joined two ТФ-1 (TF-1) glass prisms (Figs. 2, 3, structure of the adhesive gelatin layer); b) were applied as an adhesive film to glass. The authors measured birefringence by means of a polarization microscope. They investigated the dependence of the adhesive power on the formation conditions of the adhesive layers of 20% gelatin solutions with and without admixture (2 M urea solution, 1 M acetamide, or 0.45 M Na_2SO_4) (Table, Fig. 4). The investigations of the kinetics of development of internal stresses in the formation of films on glass surfaces showed that there was a linear relation between stress and film

Card 1/2

Influence of Internal Stresses on the Adhesion Properties of Gelatin Films

S/069/60/022/004/002/003
B019/B054

thickness. In thick films there arise stresses that lead to a detachment of the film from the film-glass interface, or to a separation within the glass. A limit (critical value) of the internal stresses arising in the formation of adhesive layers may be regarded as a criterion for rating the adhesion properties of the film and the strength of the solid base. V. A. Kargin is mentioned in the text. There are 7 figures, 1 table, and 4 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR Otdel polimerov (Institute of Physical Chemistry of the AS USSR, Branch for Polymers). Leningradskiy tekhnologicheskiy institut pishchevoy promyshlennosti (Leningrad Technological Institute of the Food Industry)

SUBMITTED: March 30, 1959

Card 2/2

87769

S/069/60/022/006/006/008
B013/B066

11.2230
15 9200 2109,2209,1526

AUTHORS: Zverev, M. P. and Zubov, P. I.

TITLE: Interaction of Plasticizers With Fillers

PERIODICAL: Kolloidnyy zhurnal, 1960, Vol. 22, No. 6, pp. 756-757

TEXT: In the present letter to the editor the authors report on the determination of the wetting heat of carbon black with plasticizers of different polarity. The following fillers were used: gas-channel black with a specific surface of 110 m^2 and 4.8% oxygen content, and gas-channel black without oxygen-containing groups with a specific surface of 100 m^2, which was annealed at 900°C in the hydrogen current. The wetting heat was measured on an adiabatic calorimeter (Ref. 2). The table gives the values of the wetting heat obtained. The evolution of heat occurring during the wetting of gas-channel black with molecules of polar plasticizers (dibutyl sebacate, dibutyl phthalate) is about twice as high (0.055 cal/m^2) as in the wetting with molecules of non-polar plasticizers (0.035 cal/m^2). As a result, the surface of the gas-channel black becomes

Card 1/2

Interaction of Plasticizers With Fillers

87769
S/069/60/022/006/006/008
B013/B066

hydrophobic by the incorporation of polar plasticizers. As was shown in Ref. 1, the sorption of macromolecules of divinyl styrene rubber on the surface of the filler is thus increased. It was further found that the evolution of heat during the wetting of fillers which contain no functional groups is practically independent of the dipole moment of the plasticizer. It may be assumed from the data obtained, that the better mechanical properties of filled divinyl styrene rubbers in the presence of polar plasticizers are due to the screening of functional groups of carbon black by polar molecules of the plasticizer. According to the authors, this fact might be of interest in connection with the problem of obtaining oil-filled divinyl styrene rubbers. N. V. Mikhaylov and E. Z. Faynberg are thanked for assistance in the thermochemical experiments There are 1 table and 2 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR). Institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova, Moskva (Institute of Fine Chemical Technology imeni M. V. Lomonosov, Moscow)

SUBMITTED: May 17, 1960

Card 2/2

Zubov, P. I.

Report presented at the Conference on Heat and Transfer.
Minsk, USSR, 5-10 June 61.

(19)

RN-2852
56

287. P. I. Povarnin, Generalization of the Data on the Boiling Crisis at Water Flow in Tubes at the Temperature Below Saturation Temperature.

288. I. R. Krichevsky, N. E. Khazanova, L. R. Linshits, Diffusion in Gases near the Critical Point of Liquid-Vapour Equilibrium.

289. V. I. Tolubensky, The Rate of Vapour Bubble Growth at Boiling of Liquid.

290. N. G. Styrikovich, New Investigation Results on Heat Transfer at Surface Boiling.

291. K. I. Ismailov, The Theory of Convective Heat Transfer at Vaporization.

292. I. R. Krichevsky, N. E. Khazanova, L. S. Lesnevskaya, Diffusion in Gases at High Pressures.

293. P. I. Povarnin, Thermodynamic Similarity Method for Liquid Surface Tension Calculation.

294. A. V. Arseev, A. S. Nevsky, Aerodynamics, Burning and Heat Transfer in Cylindrical Chambers at Gas Fuel Combustion.

295. G. A. Ostroumov, Hydrodynamic Explanation of Electrical Properties of Insulating Liquids.

296. K. M. Lenovich, Aerodynamic Means of Heterogeneous Process Intensifications.

297. S. M. Bips, Thermodynamic Investigation of the Liquid Oxygen Gasification Process.

298. G. V. Vasyunina, L. S. Akselrod, On the Determination of the Work Duration of Freezers of Air Separators.

299. S. Endrenyi (HPR), Heat and Mass Transfer at the Hygroscopic Phase of Drying at Convective and Conductive Heat Transfer System.

300. A. S. Ginsburg, Actual Problems of Drying of Grain.

301. V. G. Karpenko, Heat and Mass Transfer at Drying of Brown Coal, Combined With Grinding.

302. P. I. Zubov, L. A. Lepilkina, Investigation of Inner Stresses in Polymer Coatings.

303. A. F. Sorokin, Yu. K. Koptelov, Radiative-Convective Pulsation Drying of Belted Cables ...

304. V. N. Pravdin, A. N. Uspensky, Experimental Investigation of Heat and Mass Transfer of the Ribbon-Casting Machine Dryer.

305. G. A. Bunin, Intensification of Convective and Conductive Drying of Textiles by Nozzle Blowing.

S/081/62/000/022/086/088
B101/B186

AUTHORS: Zubov, P. I., Lepilkina, L. A.

TITLE: Internal stresses in polymer coatings and methods of measuring them

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1962, 560, abstract 22P540 (Lakokrasochn. materialy i ikh primeneniye, no. 5, 1961, 19 - 27)

TEXT: The fundamental characteristics of a novel apparatus with automatic recording, used to measure the internal stresses (IS) in polymer coatings are outlined. The sign-reversing character of the IS distribution over the cross section and over the surface of the film, as described in published data, is confirmed; this is due to inhomogeneous distribution and evaporation of the solvent. The values of IS arising in the formation of polyester coatings, their adhesion and other physicomechanical properties depend on the modification undergone by the support and on the contents of accelerator and initiator. It was established that films subject to increased stress are less resistant to aging. IS attaining 25 - 30 % of the ultimate tensile strength cause the formation of cracks in

Card 1/2

Internal stresses in polymer... S/081/62/000/022/086/088
B101/B186

aging. 22 references. [Abstracter's note: Complete translation.]

Card 2/2

15.9120

26289
S/190/61/003/008/002/019
B110/B220

AUTHOR: Gavrishchuk, V. Ya., Zubov, P. I.

TITLE: Mechanism of optimum vulcanization of some synthetic polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 8, 1961, 1125-1127

TEXT: It had been established by the authors (Ref. 1: Vysokomolek. soyed. 1, 913, 1959) that an unsteady change of the mechanical properties of vulcanizates is due to the decomposition of both intermolecular and intramolecular sulfide chains. This conclusion was experimentally verified by the present study. The change of the mechanical properties of the vulcanizates was investigated: a) Canadian butyl rubber with 0.09 % of intramolecular polysulfide sulfur; b) Soviet butyl rubber without polysulfide sulfur. Vulcanization was effected by tetramethyl thiuram disulfide which can form merely mono- and disulfide cross links. The vulcanizates had the following composition by weight: 100 polymer; 5 thiuram; 5 ZnO; 0.5 stearic acid; 26 kaolin; Data obtained: 1) Canadian butyl rubber showed a maximum of tensile strength; 2) the tensile strength of Soviet butyl rubber, how-

Card 1/2

Mechanism of optimum vulcanization ...

ever, remained constant (about 25 kg/cm^2); 3) if the polysulfides were extracted from Canadian butyl rubber, its tensile strength remained constant (about 63 kg/cm^2). The same results were obtained for vulcanizates of Neoprene. Neoprene was vulcanized at 145°C. At a polysulfide sulfur content of 0.11 %, the tensile strength reached a maximum. It decreased again, when vulcanization was continued for a long time. No maximum of tensile strength was found, however, for Neoprene without polysulfide sulfur. The optimum vulcanization is determined by the decomposition of intramolecular polysulfides. There are 2 figures and 5 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)

SUBMITTED: July 6, 1960

Card 2/2

ZUBOV, P.I.; LEPILKINA, L.A.

Determination of internal stresses during formation of gelatine films [with summary in English]. Koll.zhur. 23 no.4:418-422 Jl-Ag '61. (MIRA 14:8)

1. Institut fizicheskoy khimii AN SSSR, Moskva.
(Films (Chemistry)) (Strains and stresses)

ZUBOV, P.I.; LEPILKINA, L.A.; GIL'MAN, T.P.; LEYTES, A.Z.

Internal stresses during hardening of polyester resins.
Koll.zhur. 23 no.5:563-567 S-O '61. (MIRA 14:9)

1. Institut fizicheskoy khimii AN SSSR, Otdel polimerov.
(Resins, Synthetic--Testing) (Esters)

S/020/61/141/002/017/027
B101/B147

AUTHORS: Zubov, P. I., Lipatov, Yu. S., and Kanevskaya, Ye. A.

TITLE: Dependence of the conformation of a polymer chain in solution on the concentration of the latter

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 2, 1961, 387-388

TEXT: In previous papers (Vysokomol. soyed., 1, 432 (1959)); (Koll. zhurn., 21, 598 (1960)), the authors found that on transition from dilute to concentrated solutions of polymethacrylic acid the temperature coefficient of viscosity changes its sign. The present paper deals with this effect which is due to changes of conformation of the chain. The viscosity of aqueous solutions of polymethacrylic acid (molecular weight 330,000) with concentrations of 6.9 and 12% was measured at 20-65°C as a function of shear stress. A rotating viscosimeter of the Shvedov type was used for the purpose. Results are given in Fig. 1. This negative thixotropy is explained by coiling up of chains under the effect of shear stress. This effect has an upper and a lower temperature limit. The upper limit is the temperature of gel formation above which the chains cannot coil up any

Card 1/3 2

Dependence of the conformation ...

longer. Gel formation can be explained by the fact that in coiled-up chains more COOH groups can react with each other. Thus, the conformation of polymer molecules in solution depends on the type of solvent and on the temperature and concentration of the solution. A paper by N. F. Bakeyev, V. S. Pshezhetskiy, and V. A. Kargin (Vysokomol. soyed., 1, 1812 (1959)) is referred to. There are 1 figure and 10 references: 8 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: J. Elliassaf, A. Silberberg, A. Katchalsky, Nature, 25, 53 (1957).

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of Academy of Sciences USSR)

PRESENTED: June 20, 1961, by V. A. Kargin, Academician

SUBMITTED: June 12, 1961

Card 2/2

YAKUBOVICH, D.S.; GROZINSKAYA, Z.P.; SANZHAROVSKIY, A.T.; ZUBOV, P.I.

Studying the physicomechanical properties of polyurethan coatings.
Lakokras.mat.i ikh prim. no.6:32-37 '62. (MIRA 16:1)
(Protective coatings--Testing) (Ethyl carbamate)

L 22000-66 EWT(m)/EWP(v)/EWP(j)/T/ETC(m)-6 IJP(c) WW/RM

ACCESSION NR: AP5024504 UR/0191/65/000/010/0031/0034 28
678.674.06-419:677.521.01.539.219.2 13

AUTHOR: Sukhareva, L. A.; Smirnova, Yu. P.; Zubov, P. I.; Zamotova, A. V.; Khvilivitskiy, R. Ya.

TITLE: Internal strain in reinforced systems based on polyester acrylate binders

SOURCE: Plasticheskiye massy, no. 10, 1965, 31-34

TOPIC TAGS: fiberglass, glass cloth, epoxy plastic, polyester plastic, adhesion, internal stress, bending strength, rupture strength

ABSTRACT: The effect of curing conditions, binder composition and surface treatment of the reinforcing glass on the internal strain, mechanical, and adhesive properties of fiberglass was studied. Two curing rates were used--(1) gradual heating for 19 hours to 200 C and then holding at 200 C for 10 hours, and (2) heating to 200 C in 2 hours and holding for 20 hours. Glass cord treated with paraffin emulsion or with vinyltriethyoxysilane and glass cord heat treated at 400-450C were used for reinforcing. A two-component system (epoxy resin and polyester acrylate MD) or a three-component system (epoxy, MD and an unsaturated carboxyl-containing compound) were used as binders. Internal strain was

Card 1/2

ACCESSION NR: AP5024504

greater across the warp than along the warp. Greater internal strains were produced by the slower curing method. The mechanical characteristics of fiberglass cured by method (2) were generally higher. Physical-mechanical properties and internal strain were lower in fiberglass made of the three-component binder. Paraffin emulsion had little effect on internal strain, while the silane coating increased internal strain in the fiberglass made of the three-component binder. The strength properties of the fiberglass depend on the ratio of the internal strain values to the adhesion of the binder to the glass fiber surface. Fiberglass made of resin based on the carboxyl-containing compound, which has greatest internal strain and least adhesion, is weakest. Greatest strength was obtained with the three-component binder applied to glass cloth treated with vinyltriethyoxysilane, where adhesive strength exceeds 200 kg/sq cm and the glass is torn out when the sample is broken. Orig. art. has: 8 figures and 3 tables

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: II

NR REF SOV: 003 OTHER: 000

S/190/62/004/005/017/026
B110/B108

AUTHORS: Gavrishchuk, V. Ya., Zubov, P. I.

TITLE: Reversion mechanism of natural rubber vulcanizates

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 5, 1962, 734-737

TEXT: Natural rubber vulcanizates (smoked sheets) with equal plasticity and different sulfur contents were examined. The dependence of the polysulfide sulfur and of the physical and mechanical properties of the vulcanizates on their sulfur concentration and period of vulcanization was determined according to a previous paper of the authors (Vysokomolek. soyed., 1, 913, 1959). Results: The vulcanization optimum is correlated to the content of polysulfide sulfur, which, in turn, is dependent on the total content of sulfur and on the time of vulcanization. Minimum strength corresponds to a minimum content of polysulfide sulfur at a total content of sulfur ranging from 2 to 15%. With the content of sulfur increasing from 2 to 20 parts by weight per 100 parts by weight of rubber, strength

Card 1/2

decreased from 30 to 94% of the maximum strength, and the relative elongation decreased from 10 to 97% of the maximum elongation. The relative elongation also decreases substantially with decreasing number of lattice sites since the reversion process is determined by the decomposition of both the intermolecular and intramolecular polysulfides. Tensile tests of mixtures containing 5% by weight of phenyl-β-napthyl amine and of mixtures without inhibitor showed that the presence of an inhibitor did not affect the mechanical properties of the vulcanizates. Hence, the reversion and the vulcanization optimum of natural rubber are determined by the decomposition of the intermolecular and intramolecular polysulfides, and not by the oxidative destruction of the macromolecules. There are 3 figures.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR); Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institute imeni Lensovet)

SUBMITTED: April 6, 1961

S/190/62/004/011/010/014
B106/B101

15.8500
15.8121

AUTHORS: Shreyner, S. A., Zubov, P. I., Volkova, T. A.

TITLE: Study of the internal stresses in foils of epoxy resin

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 11, 1962, 1714 - 1717

TEXT: The increase and decrease of the internal stresses was studied in adhesive foils of ЭД-5 (ED-5) epoxy resin as a function of the solidification temperature and of the nature of the solidifier. When the foils solidify in the presence of polyethylene polyamine above sulfuric acid at room temperature, the internal stresses increase slowly in time and after 20 days they reach the constant value of 4 kg/cm^2. If the solidification is performed at 110°C no stresses occur; this indicates a high rate of relaxation. When the foils are cooled to -20°C, stresses of ~70 kg/cm^2 occur at first, which decrease by relaxation to a constant value of 40 kg/cm^2 when the foils are kept for 3 days at 20°C. These internal stresses are reversible and depend on temperature, heating time, and chemical nature of the solidifier. The relaxation time, too, depends

Card 1/3

on the nature of the solidifier and decreases in the order polyethylene polyamine > phenol formaldehyde resin > hexamethylene diamine. The relaxation proceeds according to the equation of F. Shvedov (J. de Physique, 8, 341, 1889). The results imply that the stresses are caused by differences in the thermal expansion coefficients as between the foils and the supports. When the foils solidify in the presence of polyethylene polyamine at 110°C, the internal stresses as well as the microhardness of the epoxy resin foils increase proportionally to the increasing concentration of the solidifier, pass through a maximum with 6 - 8% polyethylene polyamine, and decrease again. Hence, maximum crosslinking is inhibited by a deficiency as well as by an excess of solidifier. When the foils form in the presence of phenol formaldehyde resin, the internal stresses increase monotonically with the concentration of the solidifier. With increasing thickness of the foils, the stresses increase linearly. When the critical stress values of 120 - 140 kg/cm^2 are reached, the films become subject to a spontaneous cohesive peeling-off. There are 7 figures. The English-language references are: N. A. de Bruyne, J. Appl. Chem., 6, 303, 1956; R. M. Mc Rintock, M. J. Hiza, Mod. Plast., 1958, 172.

Study of the internal stresses...

S/190/62/004/011/010/014
B106/B101

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR). Leningradskiy filial GIPI-4 (Leningrad Branch of the GIPI-4)

SUBMITTED: July 11, 1961

Card 3/3

30279
S/069/62/024/002/004/008
B101/B110

15.8350

AUTHORS: Zubov, P. I., Lepilkina, L. A., Gil'man, T. P.

TITLE: Effect of lubricant and finishing materials on the internal stresses and adhesion properties of polyester coatings

PERIODICAL: Kolloidnyy zhurnal, v. 24, no. 2, 1962, 174-177

TEXT: ПН-1 (PN-1) polyester resin films, ~2200 μ thick, were applied to glass parallelepipeds and polymerized at 75°C in the presence of 3% cumene hydroperoxide and 8% cobalt naphthenate dissolved in styrene. One of the glass surfaces was modified with a preparation, and the internal stress was measured optically with a self-recording instrument. Adhesion was determined from the maximum (critical) stress at which the film detached from the glass. The following modifiers were used: (1) Paraffin emulsion consisting of stearin, vaseline, and transformer oil with CO-20 (SO-20) dicyana diamine formaldehyde resin as emulgator: the film detached already after 30 min. (2)АС-1 (AS-1) disapol, a polymerization product from butyl methacrylate and methacrylamide in the presence of dibutyl sebacinate: here, and on unmodified surfaces, at lower internal stress, however, separation set in after 12 hrs. (3)МФ-17 (MF-17) urea formaldehyde resins

Card 1/3

S/069/62/024/002/004/008
B101/B110

showed better results: film adhesion to glass exceeded 12 hrs. (4) The best results were obtained with ПВЭ-3 (PVE-3) polyvinyl acetate emulsion with and without chromolan additions (a cation-active preparation). Internal stress increased after 30-60 min but was moderated by 0.7% chromolan. Then, gradual relaxation followed. The film did not detach from the glass. Tests for the effect of film thickness on its separation from the glass yielded similar results from the different preparations: from glass modified with paraffin emulsion, a film thinner than that from unmodified glass detached, whereas with MF-17 thicker films showed good adhesion. Data are given for glass reinforced plastics with a 50% content of glass fiber: the bending strength (a) and internal stress (b) obtained with paraffin emulsion were 2200 kg/cm^2 and 10.8 kg/cm^2, respectively; with MF-17 a = 2880, b = 28.6; with AS-1 a = 2596, b = 3.8, and with PVE-3 containing 0.7% chromolan, a = 3300, b = 2.8. There are 4 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR, Otdel polimerov (Institute of Physical Chemistry of AS USSR, Department of Polymers), Vsesoyuznyy nauchno-issledovatel'skiy proyektnyy institut ugol'nogo mashinostroyeniya, Moskva (All-Union Scientific Research, Design and Planning Institute of Coal, Moscow)

15.9130

4416

S/069/62/024/005/009/010
B117/B186

AUTHORS: Pospelova, K. A., Vorob'yeva, T. A., Zubov, P. I.

TITLE: Improvement of the antifreezing properties of synthetic latices and their oil-water emulsion models

PERIODICAL: Kolloidnyy zhurnal, v. 24, no. 5, 1962, 602-608

TEXT: Attempts were made to improve the antifreezing properties of CKC-65 (SKS-65) latex produced by the Voronezhskiy zavod SK (Voronezh Synthetic Rubber Plant) and of polystyrene latex synthesized in the laboratory of the Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR). It has been established that addition of emulsifiers alone does not make SKS-65 frostproof at -15°C and that irreversible coagulation (coalescence) takes place at this temperature. Such latex will, however, be completely frostproof at this temperature if aqueous solutions of acetamide, urea, some ammonium salts, or especially ammonia are added. The improvement is evidently related to the osmosis of sufficient quantities of a non-freezing liquid, as was observed by V. V. Vol'khin and V. L. Zolotavin in the case of iron hydroxide and

Card 1/2

Improvement of the antifreezing ...

electrolyte (Kolloidn. zh. 23, 134, 1961). The antifreezing properties of polystyrene latex are easier to improve because the addition of emulsifiers alone is sufficient for temperatures down to -15°C. By adding ammonium caseinate the latices under consideration can be rendered frostproof down to -50°C. Complexes of ammonium caseinate and soaps then form a protective layer at the particle surface which prevents the mutual adhesion and, consequently, the coalescence of particles that are compressed by the growth of ice crystals. Similar results have been obtained for water emulsions of benzene stabilized by soaps. There are 6 figures and 2 tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR, Moskva (Institute of Physical Chemistry AS USSR, Moscow)

SUBMITTED: October 3, 1961

Card 2/2

15?500

S/030/62/000/003/004/007
B116/B104

AUTHORS: Zubov, P. I., Lepilkina, L. A.

TITLE: Device for investigating polymeric coats

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 3, 1962, 49-50

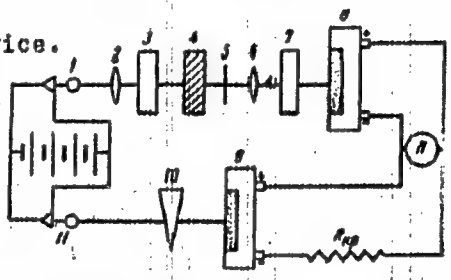
TEXT: A recording device developed at the laboratoriya polymernykh pokrytiy Instituta fizicheskoy khimii Akademii nauk SSSR (Laboratory for Polymeric Coats of the Institute of Physical Chemistry of the Academy of Sciences USSR) is described. It serves to measure internal stresses and adhesion in polymeric coats during their formation and aging. The internal stresses are calculated from the intensity of the transmitted light. The light intensity is automatically recorded by a photocell and an electronic potentiometer. The light from the lamp 1 (Fig.1) passes through the condensing lens 2 and the polarizer 3 to the sample 4, then through slit 5 and object lens 6 to the analyzer 7 (crossed with polarizer 3), and finally to the measuring photocell 8. The compensating photocell 9 is switched in, parallel to 8. 9 is reached by light from the light source 11 (over a system of diaphragms and the neutral wedge 10). The internal stresses on the various planes are measured by automatic shifts (4 mm/min)

Card 1/2

Device for investigating ...

of the stage with the sample on it. The film is prepared in a chamber at a certain temperature (20-100°C). The temperature in the chamber is electronically controlled. Increase and relaxation of internal stresses during formation of gelatin, polyester, and other films have been studied with the device described. Experiments showed that the internal stresses depended on the conditions of film formation, the concentration of the initial solution, the backing, and the percentage of initiator and accelerator of the polymerization. The adhesion of the polymeric coats is determined from the critical stress which automatically detaches the film from the backing. The maximum critical stress correspond to the adhesion. There are 3 figures and 3 Soviet references.

Fig. 1. Electrooptical diagram of the device.



Card 2/2

S/020/63/149/001/017/025
B101/B144

AUTHORS: Zverev, M. P., Ruchinskiy, S. P., Zubov, P. I.

TITLE: Dependence of the heat effects occurring on polymer dissolution on the nature of the solvent

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 1, 1963, 128 - 130

TEXT: The dissolution heat of СКС-30А (SKS-30A) divinyl styrene copolymer and СКН-26 (SKN-26) divinyl nitrile copolymer was determined together with the contraction Δv of the solution in ditolyl methane, dicumyl methane, dibutyl sebacinate, and dibutyl phthalate. The equation $\zeta = -E_{11} - E_{22} + 2E_{12}$ (1) where E_{11}, E_{22}, E_{12} respectively denote the interaction of the molecules of the solvent, the polymer and the solvent plus polymer was found to be wrong. The nonpolar SKS-30A showed high heat effects in solvents with high dipole moment, the polar SKN-26 showed maximum heat effects in the weakly polar ditolyl methane and lesser heat effect in strongly polar solvents. Therefrom it is concluded that Eq.(1) must be completed by a member E'_{22} taking account of the energy of the local bonds forming between the macromolecule links in the solution:

Card 1/2

Dependence of the heat...

$Q = -E_{11} - E_{22} + 2E_{12} + E'_{22}$ (2). The bond between the links is manifest, e.g., from the contraction of SKN-26 solution in solvents with high dipole moment corresponding to coiling of the macromolecules. In SKS-30A, the intrinsic viscosity decreases when the dipole moment of the solvent increases. The effect of the plasticizer on the flow point is discussed. Addition of ditolyl methane, dibutyl sebacinate or dibutyl phthalate reduces gradually the flow point of SKS-30A. Small additions (1.5 %) of [illegible] increase the flow point, greater additions reduce it a.o. This may be important for the plasticizing of polymers and for fiber formation. There are 1 figure and 2 tables.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov); Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

PRESENTED: August 20, 1962, by V. A. Kargin, Academician

SUBMITTED: August 20, 1962

Card 2/2

ACCESSION NR: AP4043821 S/0303/64/000/004/0034/0037

AUTHOR: Grinyute, G. A., Zubov, P. I., Sanzharovskiy, A. T.

TITLE: Analysis of the dependence of organic coating strength on time

SOURCE: Lakokrasochny*ye materialy* i ikh primeneniye, no. 4, 1964, 34-37

TOPIC TAGS: organic coating, nitrocellulose, nitro lacquer, nitrocellulose lacquer, synthetic automotive enamel, synthetic enamel binder, automotive enamel, polyester lacquer, film tensile strength, film rupture elongation, film stress rupture strength, film strength time dependence

ABSTRACT: Free films of nitrocellulose VNVA, nitro lacquer, nitrocellulose lacquers NTs-11-00 and NTs-11-46, binders for synthetic automotive enamels (melamine-formaldehyde + alkyd resins), white and green synthetic automotive enamels (set 10 hrs. at 125C), as well as polyester lacquer PE-220 (set 3 hrs. at 60 , 3 hrs. at 80 or heat cured 200 hrs. at 120C) were tested for tensile strength, rupture elongation and stress-rupture strength. Deformation curves and elastic modulus values were obtained after maintaining samples in a vacuum drier for 90 hrs. at 35C. The results indicate that rupture elongation is not governed by stress (0-8 kg/mm^2) in films with elongation values up to 5% and decreases with stress reduction in films with elongation values exceeding

Card 1/2

ACCESSION NR: AP4037275 S/0190/64/006/005/0803/0805

AUTHOR: Zubov, P. I.; Sukhareva, L. A.; Kiselev, M. R.; Chistyakov, A. M.

TITLE: Effect of adhesion on internal stresses in adhesive joints

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 5, 1964, 803-805

TOPIC TAGS: adhesive, PN-1 polyester, adhesion, coating, internal stress, glass, glass reinforced plastic

ABSTRACT: The effect of the nature of the surfaces to be bonded on the magnitude of internal stresses in adhesive joints has been studied. The internal stresses were measured by an optical method. Adhesion of the glue line to the bonded surfaces was determined from ultimate stresses causing spontaneous peeling and from the shearing stress causing failure of the joint. Internal stresses in coatings were also measured. Experiments were conducted with adhesives with

Card 1/2

ACCESSION NR: AP4037276 S/0190/64/006/005/0811/0817

AUTHORS: Zubov, P. I.; Osipov, Ye. A.; Sukhareva, L. A.

TITLE: Investigation on structure formation in polyvinylalcohol solutions

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 5, 1964, 811-817

TOPIC TAGS: polyvinylalcohol, polyvinylalcohol dimethylformamide solution, polyvinylalcohol macromolecule, macromolecule coiling, macromolecule globulization, intramolecular bond, binary solvent, polyvinylalcohol acetylation, polyvinylalcohol gel

ABSTRACT: Aqueous solutions of polyvinylalcohol (PVA), of molecular weight 31 000 and in a concentration of 0.125-16.0 gm per 100 ml were heated within a 5-95C temperature range. This brought about a lowering of their viscosity. Acetylation of PVA solutions with formaldehyde in the presence of sulfuric acid resulted in an increased viscosity, but caused no gel formation. Treatment with 0.06% succinic dialdehyde caused gelation in PVA solutions in concentrations above 1.5 gm/100 ml. At lower concentrations the viscosity was lowered with time. This the authors attribute to globulization of the macromolecules. When PVA was dissolved in

Card 1/2

ACCESSION NR: AP4043127 S/0069/64/026/004/0454/0457

AUTHOR: Zubov, P. I.; Sukhareva, L. A.; Paturoyev, V. V.

TITLE: Effect of fillers on the mechanical and adhesive properties of filled coatings

SOURCE: Kolloidny*y zhurnal, v. 26, no. 4, 1964, 454-457

TOPIC TAGS: polyester coating, reinforced coating, filled coating, glass fabric, gelatin, quartz sand, kaolin, internal stress, adhesive strength, tensile strength, filler modification

ABSTRACT: The effect of fillers on the mechanical and adhesive properties of glass-fabric-reinforced polyester coatings formed on glass substrates was studied. PN-1 polyester resin was used as the binder, VV glass fabric as the reinforcement, and cement, quartz sand, or kaolin as fillers. The experiments included tensile tests, measurements of internal stresses in coatings by an optical method, and evaluation of the adhesive strength from maximum critical stresses which cause spontaneous peeling of the film from the substrate. It was shown that reinforcement of polyester coatings with VV glass

Card 1/2

ACCESSION NR: AP4043127

fabric increases both the adhesion of the coating to the substrate and the internal stresses at the film-substrate boundary. Filling of reinforced polyester resins with mineral fillers to which the resin adheres better than to the substrate sharply increases the adhesion of the coating to the substrate, increases the internal stresses, and decreases the tensile strength of coatings. Internal stresses can be reduced by filling reinforced coatings with fillers modified by surface-active agents which decrease the banding strength between the filler particles and the binder. The maximum tensile strength of reinforced polyester coatings filled with modified fillers is observed when internal stresses are diminished by a factor of 1/1.5. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AN SSSR)

SUBMITTED: 03Jul63 ATD PRESS: 3072 ENCL: 00

SUB CODE: MT, GC NO REF SOV: 004 OTHER: 000

Card 2/2